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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,224	08/21/2001	YeYi Wang	M61.12-0385	8170

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EXAMINER
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HAN, QI

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/934,224	WANG, YEYI	
	<b>Examiner</b>	<b>Art Unit</b>	
	Qi Han	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-10, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 7-8, 11-12, 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/11/02&amp;1/18/05</u> | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Information Disclosure Statement*

1. The references listed in the Information Disclosure Statement submitted on 07/11/2002 and 01/18/2005 have been considered by the examiner (see attached PTO-1449).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messerly et al. (US 6,076,051) hereinafter referenced as Messerly, in view of Morin et al. (US 5,748,841) hereinafter referenced as Morin.

As per **claim 1**, Messerly discloses information retrieval utilizing semantic representation of text (title), comprising:

“identifying at least one semantic token activated by a word” (Fig. 3 and column 5, lines 34-40, ‘the facility first semantically indexes the target document by converting (identifying) each sentence or sentence fragment of the target document into a number of tokens’, ‘stores these semantic tokens in the index’);

“placing the identified semantic token in a list of potential semantic tokens for the semantic representation of the string of words” (Fig. 1 and column 2, line 64 to column 3, line

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30, 'identifies, for a particular sense of a word, senses of other words that generic terms for the sense of the word ("hypernyms")...to create additional logical forms (list of potential semantic tokens)', wherein 'index construction' and 'token location' read on "placing");

"building the semantic representation in part by utilizing one of the semantic tokens in the list of potential semantic tokens" (column 11, 'the facility adds a token (in part) for each of the words in the expanded logical form to the index to form (build) the semantic representation of the target documents').

Even though Messerly discloses "placing a semantic token in the list of potential semantic tokens for the word" as state above, Messerly does not expressly disclose a "wildcard" used as a semantic token in the list and "the wildcard semantic token being capable of being activated by every word in the language". However, these features are well known in the art as evidenced by Morin who, in the same field of endeavor, discloses supervised context language acquisition system (title), and teaches that 'semantic masks are generative expressions based on the semantic language representation...contain eventually one or several wildcards' that 'can be substituted by any string' (column 17, lines 42-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Messerly by specifically providing semantic masks with wildcard for the semantic language presentation, as taught by Morin, for the purpose of allowing the generation of different structures with single mask (Morin: column 17, lines 51-52).

As per **claim 2** (depending on claim 1), Messerly in view of Morin further discloses "placing partial parses of semantic tokens in a chart" (Messerly: Figs. 17-18 and column 12, lines 6-27 'a partial logical form diagram (chart)', 'match partial logical forms (partial parses)'),

and “full parses of semantic tokens in a candidate list” (Messerly: Figs. 11-12 and 15 and column 8, lines 41-60, ‘the expanded logical form (full parses) contains’ derived ‘hypernyms (corresponding to semantic tokens in a candidate list)’).

As per **claim 3** (depending on claim 2), Messerly in view of Morin further discloses “providing an indication of the identity of an item needed to extend the partial parse” (Messerly: Fig. 17, blocks 1712 and 1722 indicate the identities of items needed to extend the partial parse).

As per **claim 4** (depending on claim 3), Messerly in view of Morin further discloses “the item needed to extend a partial parse comprises a semantic token” (Messerly: Fig. 17, blocks 1712 ‘person’ and 1722 ‘touch’ are semantic tokens).

As per **claim 5** (depending on claim 4), Messerly in view of Morin further discloses “the item needed to extend a partial parse comprises a wildcard semantic token” (Morin: column 17, lines 42-50, as stated in claim 1, the ‘wildcard’ ‘can be substituted by any string’, wherein ‘any string’ can be interpreted as including those word(s) in a partial parse).

As per **claim 14**, it recites a computer-readable medium having computer executable instructions. The rejection is based on the same reason as described for claim 1, because the claim recites the same or similar limitations as claim 1.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Messerly in view of Morin, as applied to claim 3, and further in view of Anward et al. (US 6,658,377 B1) hereinafter referenced as Anward.

As per **claim 6** (depending on claim 3), Messerly in view of Morin does not expressly disclose “only placing the wildcard semantic token in the list under two alternative conditions”.

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However, these features are well known in the art as evidenced by Anward who, in the same field of endeavor, discloses method and system for text analysis based on the tagging, processing, and/or reformatting of the input text (title), comprising using wildcard 'when (one condition) a word does not have an obvious referent' (column 9, lines 30-31) or giving 'a wildcard reference' to a group 'considered to be unique' (interpreted as an alternative condition) (column 9, lines 40-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Messerly in view of Morin by specifically providing a wildcard reference with alternative conditions, as taught by Anward, for the purpose of offering appropriated condition/action rules for referencing the text fragment (Anward: column 9, lines 57-58).

4. Claims 9-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messerly in view of Morin, as applied to claim 3, and further in view of Shieber et al. (US 6,138,098) hereinafter referenced as Shieber.

As per **claim 9**, Messerly discloses information retrieval utilizing semantic representation of text (title), comprising:

"generating a semantic token that has a word in the text as a child node" (Figs 5 and 7A and column 5, lines 31-54, 'converting the sentence into (generating) semantic tokens together presenting a expanded logical form', 'parses input text to identify logical forms', 'tokenization' and 'produces (generates) logical forms the relate ...the input text'; column 10, line 28, 'tree form (necessarily include a child node)');

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“utilizing at least one of the generated semantic tokens in the semantic structure” (column 5, lines 31-54, ‘compares (utilizing) these semantic tokens to the semantic tokens stored in the index to identify locations in the target documents’; column 11, lines 9-10, ‘the facility adds a token for each of the words in the expanded logical form to the index to form the semantic representation of the target documents’);

Even though Messerly discloses “generating a semantic token for a word in the text” as stated above, Messerly does not expressly disclose a “wildcard” used as a semantic token for a word in the text. However, these features are well known in the art as evidenced by Morin who, in the same field of endeavor, discloses supervised context language acquisition system (title), and teaches that ‘semantic masks are generative expressions based on the semantic language representation...contain eventually one or several wildcards’ that ‘can be substituted by any string’ (column 17, lines 42-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Messerly by specifically providing semantic masks with wildcard for the semantic language presentation, as taught by Morin, for the purpose of allowing the generation of different structures with single mask (Morin: column 17, lines 51-52).

Further, Messerly in view of Morin does not expressly disclose the wildcard semantic token “being capable of having any word as a child node” and a generated semantic token “that has a wildcard semantic token as a child”. However, these features are well known in the art as evidenced by Shieber who, in the same field of endeavor, discloses command parsing and rewrite system (title), comprising ‘non-terminal wildcard node’ for matching ‘any single non-terminal node (having a child node)’ and ‘terminal wildcard node’ for matching ‘any single terminal node

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(herein a wildcard node as a child node)' (column 8, lines 36-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Messerly in view of Morin by specifically providing a wildcard node as being non-terminal and/or terminal node, as taught by Shieber, for the purpose of matching special pattern tree nodes for the system (Shieber: column 8, lines 31-32).

As per **claim 10** (depending on claim 9), Messerly in view of Morin and Shieber further discloses "generating a semantic token that has a wildcard semantic token as a left-most child node" (Morin: column 17, lines 42-50, the 'wildcard' 'can be substituted by any string'; and Shieber: column 8, lines 36-44, 'terminal wildcard node' can matches 'any single terminal node', wherein 'any string' and/or 'any terminal node' necessarily includes a token as a left-most child node).

As per **claim 13** (depending on claim 9), the rejection is based on the same reason as described for claim 9, because the rejection for claim 9 covers the same or similar limitation(s) of claim 13 (see above).

#### ***Allowable Subject Matter***

5. Claims 7-8, 11-12 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 7**, the instant application is directed to a method of generating a semantic representation of an input text string of words from a language. The dependent claim



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combining certain well-known features in its parent claim(s), identifies the uniquely distinct features of building the semantic representation by:

placing (determining) a wildcard semantic token in the list of potential semantic tokens for the word (see independent claim 1), wherein only placing the wildcard semantic token in the list under two alternative conditions comprise A) if the word is the first word in the string of words and the entire sentence can begin with a wildcard according to the grammar; and B) if a partial parse in the chart needs a semantic token that can begin with a wildcard semantic token.

Regarding **claims 8 and 15**, the instant application is directed to a method or computer-readable medium having executable instruction of generating a semantic representation of an input text string of words from a language. Each dependent claim, combining certain well-known features in its parent claim(s), identifies the uniquely distinct features of building the semantic representation by:

placing (determining) a wildcard semantic token in the list of potential semantic tokens for the word (see the respective independent claims);

identifying a skipped word in the string of words that is not associated with a semantic token in the semantic representation;

determining that a word to the left of the skipped word is associated with a wildcard semantic token; and

associating the skipped word with the wildcard semantic token.

Regarding **claim 11**, the instant application is directed to a method of parsing text to form a semantic structure having terminal and non-terminal nodes represented by a semantic token. The dependent claim combining certain well-known features in its parent claim(s), identifies the

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uniquely distinct features of generating a wildcard semantic token, for a word in the text, that can be a non-terminal node and/or terminal node (see independent claim 9), comprising:

determining if any generated semantic tokens have an unfilled child node that is defined in part by a left-most child node that is expecting a wildcard semantic token; and  
generating the wildcard semantic token based on the fact that an unfilled child node has a left-most child node that is expecting a wildcard semantic token.

Regarding **claim 12** (depending on claim 9), the rejection is based on the same reason as described for claim 8, because the claim recites the same or similar limitation(s) as claim 8.

6. The prior art of record, Messerly et al. (US 6,076,051), Morin et al. (US 5,748,841), Anward et al. (US 6,658,377 B1) and Shieber et al. (US 6,138,098), provided numerous teachings of semantic parsing, including generating semantic representation, semantic tokenization, identifying hypernyms (corresponding to semantic token) and constructing alternative logical forms (list of candidates), using semantic marks with wildcard substitution for any string, using wildcard for matching terminal or non-terminal node, and providing condition for using wildcard. However, the combined features as stated above, are not anticipated by, nor made obvious over the prior art of the record.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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***Conclusion***

8. Please address mail to be delivered by the United States Postal Service (USPS) as follows:

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Effective January 14, 2005, except correspondence for Maintenance Fee payments, Deposit Account Replenishments (see 1.25(c)(4)), and Licensing and Review (see 37 CFR 5.1(c) and 5.2(c)), please address correspondence to be delivered by other delivery services (Federal Express (Fed Ex), UPS, DHL, Laser, Action, Purolater, etc.) as follows:

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (703) 305-5631. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil, can be reached on (703) 305-9645.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: [ebc@uspto.gov](mailto:ebc@uspto.gov). For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

QH/qh  
May 27, 2005

  
**RICHEMOND DORVIL**  
**SUPERVISORY PATENT EXAMINER**